REMARKS

The application has been reviewed in light of the Office Action dated September 25, 2001. Claims 1, 3-9, 11-18, 20-25 and 45-48 are pending in this application, with claims 1, 7, 9, 17, 18, 24 and 45-48 being in independent form. It is submitted that no new matter has been added and no new issues have been raised by the present Request.

Claims 1, 3-5, 7, 9, 11, 12, 13, 18, 20, 21, 24, 45, 47 and 48 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over U.S. Patent 5,710,591 to Bruno et al. in view of Cohen et al., IEEE 1993, "Virtual gain for audio windows". Claims 6, 14-16 and 23 were rejected under Section 103(a) as allegedly unpatentable over Bruno et al. in view of Cohen et al. and further in view of U.S. Patent 5,764,750 to Chau et al. Claims 8, 17, 25 and 46 were rejected under Section 103(a) as allegedly unpatentable over Bruno et al. in view of Cohen et al. and further in view of U.S. Patent 5,864,816 to Everett. Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 1, 7, 9, 17, 18, 24, and 45-48 are patentable over the cited art for at least the following reasons.

Independent claim 1 of the present application relates to an audio conference server for enabling an application program to provide multi-point, weight-controllable audio conferencing. The audio conference server comprises means for managing at least one audio conference, the at least one audio conference comprising a plurality of audio clients, means for receiving audio data from said plurality of audio clients and means for mixing said audio data to provide spatialized audio data to the plurality of audio clients. The mixing means includes means for providing distance-based attenuation according sound decay characteristics, at least one sound decay characteristic being assigned to each audio client from a plurality of sound

decay characteristics and the mixing means results in mixed audio data. The audio conference server also provides means for delivering the mixed audio data to the plurality of audio clients

Bruno et al, as understood by Applicant, relates to a method and apparatus for recording and indexing audio information exchanged during an audio conference call or video, audio and data information exchanged during a multimedia conference. Voice activated switching functionality of a multipoint control unit provides a video signal, which is input into the multipoint control unit from a workstation from which an audio signal is detected, to each of the other workstations in the conference. A workstation or participant-identification signal is generated by the multipoint control unit and stored with the audio signal and video information.

Cohen et al., as understood by Applicant, relates to audio windowing at a frontend, or user interface, to an audio system with a spatial sound backend. Gain adjustment is "used to control the volume of the various sources." (Abstract, page 85) A virtual gain "can be synthesized from components derived from iconic size, distance, orientation and directivity and selectively enabled according to room-wise positioning of sources across sinks." (Abstract, page 85) As understood by Applicant, virtual gain can be composed into four dimensionless components including distance effects ($gain_{distance}$). (Cohen et al., p 86) The distance-dependent gain ($gain_{distance}$) can capture the effects of distance between source and sink and is defined by a set formula. (Cohen et al., page 87-88) That is, in Cohen et al., the distance-dependent gain ($gain_{distance}$) is a single value at any given distance from a source. (See p. 87-88 and Figure 3)

Regarding claim 1, the Examiner contends that Cohen et al. discloses a mixing means for providing distance-based attenuation according to sound decay characteristics with specific

reference to Section 1.2 and Figure 3 of Cohen et al. Further, in response to the arguments included in Applicant's response dated September 5, 2001, the Examiner contends that Cohen clearly discloses that listeners can alter these parameters among teleconferees and makes specific reference to section 1.2 relating to distance dependent gain, direction dependent gain, Fig. 3 and pages 55-58 of Cohen et al. Applicant respectfully disagrees.

Section 1.1 of Cohen et al., as understood by Applicant, describes size-dependent gain, $gain_{size}$. In Cohen et al., icons for sound sources and sound sinks are displayed in a virtual room from an aerial projection, 2D bird's-eye view on a computer display, for example. (Cohen et al., page 85) Iconic size is used as suggestive of both metaphorical ear and mouth size such that a source "mouth" corresponds to emission gain and a sink "ear" corresponds to reception gain. Users may resize icons as desired within a certain range between an upper iconic size and a lower iconic size.(Cohen et al., page 87) Section 1.2 of Cohen et al., as understood by Applicant, describes distance dependent gain, $gain_{distance}$, used as one component of a virtual gain. As can be seen in Equation (2) on page 87 of Cohen et al., the distance dependent gain at any given distance, $gain_{distance}$ (distance), is defined by a single equation or characteristic. Figure 3 apparently illustrates an evaluation of this function at various distances. (See caption of Figure 3) The parameters *m* and *c* of Equation (2) are functions of iconic size and size of the virtual room. As noted above, iconic size may be varied by a user, however, a single equation or characteristic is used to determine the distance dependent gain.

Cohen et al. is not understood by Applicant to teach or suggest providing distance-based attenuation according to sound decay characteristics, at least one sound decay characteristic being assigned to each audio client from a plurality of sound decay characteristics.

Accordingly, Applicant respectfully submits independent claim 1 is patentable over the

cited art.

Independent claims 9, 18, 45 and 47 are believed to be patentable over the cited art for at least similar reasons.

Independent claim 7 of the present application relates to an audio conference server for enabling an application program to provide multi-point, weight controllable audio conferencing. The audio conferencing system comprises means for managing at least one audio conference, the one audio conference comprising a plurality of audio clients, means for receiving audio data from said plurality of audio clients and means for mixing said audio data to provide spatialized audio data to the plurality of audio clients. The mixing means includes means for providing distance-based attenuation according to sound decay characteristics and the mixing means results in mixed audio data. The audio conference server also provides means for delivering said mixed audio data to said plurality of audio clients. The means for providing distance-based attenuation according to sound decay characteristics comprises means for identifying a decay factor from one of a plurality of pre-defined decay factors and a customized decay factor for each of said plurality of audio clients. The plurality of predefined decay factors includes an audio big decay factor, an audio small decay factor, an audio medium decay factor and a constant decay factor. The means for providing distance-based attenuation according to sound decay characteristics also comprises means for determining distances between a target audio client and a plurality of source audio clients, means for determining a plurality of weighted values for each of said source audio clients based on said identified decay factor and said distance between each of said source audio clients and said target audio client, wherein each of said weighted values corresponds to a source/target audio client pair, means for generating a mix table for each of said source/target audio client pairs,

means for calculating an actual mix for said audio target clients and means for refining said actual mix for said target audio clients.

Regarding claim 7, the Examiner contends that Cohen et al. discloses "a continued gradual decay characteristics" and therefore inherently discloses an audio big decay factor, audio small decay factor, an audio medium decay factor and a constant decay factor. Applicant respectfully disagrees.

As understood by Applicant, Figure 3 of Cohen et al. is an evaluation of distance-dependent gain ($gain_{distance}$) at various distances from a source. Specifically, Figure 3 illustrates the desired behavior "to drop from loudest when the objects are touching each other to quiet across the room." (Cohen et al., Page 87-88). The distance dependent gain, $gain_{distance}$, between source and sink is determined based on the same equation or characteristic for all sources and clients. Virtual gain is composed of size dependent and position dependent dimensionless components. (Cohen et al., page 87) Individual components, however, are not identified for each of a plurality of conference participants. The same dimensionless components of the virtual gain are applied to all conference participants in Cohen et al.

Cohen et al., is not understood by Applicant to teach or suggest identifying a decay factor from one of a plurality of pre-defined decay factors and a customized decay factor for each of the plurality of audio clients, as recited in independent claim 7.

In addition, Figure 3 of Cohen et al. merely illustrates an evaluation of the $gain_{distance}$, a single decay characteristic. As can be seen in Figure 3, the value of the $gain_{distance}$ is relatively high at small distance values and decreases as distance values increase. With reference to Figure 3, it is clear that at any given distance, $gain_{distance}$ has a single value. In other words, the distance dependent gain in Cohen et al. is the same for all audio clients at a specific

distance from a source, provided the iconic size of the audio clients is the same.

Cohen et al. is not understood by Applicant to teach or suggest that the plurality of pre-defined decay factors includes an audio big decay factor, an audio small decay factor, an audio medium decay factor, and a constant decay factor, as also recited in independent claim 7.

Accordingly, Applicant respectfully submits that claim 7 is patentable over the cited art.

It is respectfully submitted that claims 17, 24, 46 and 48 are patentable over the art of record for at least similar reasons.

Independent claims 17 and 46 are believed to be patentable over the combination of Bruno et al. and Cohen et al. for at least similar reasons. Further, Everett is not believed to provide any of the elements missing from Bruno et al. and Cohen et al. that would have made claims 17 and 46 obvious to a person of ordinary skill in the art.

Accordingly, Applicant respectfully submits that claims 17 and 46 are patentable over the cited art for at least one or more of the above-mentioned reasons.

The Office is hereby authorized to charge any additional fees which may be required in connection with this Request and to credit any overpayment to our Deposit Account No. 03-3125.

If an additional petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition, and the Commissioner is authorized to charge the requisite fees to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Entry of this Request and allowance of this application are respectfully requested.

Respectfully submitted,

RICHARD F. JAWORSKI
Reg. No. 33,515
Attorney for Applicant
Cooper & Dunham LLP
Tel.: (212) 278-0400